Claims

1. A method of manufacturing a curved laminated automotive glazing panel having a radius of curvature at at least one portion that is less than 500 mm comprising the steps of:
a) depositing a solar control coating layer comprising a coating stack having at least two spaced sputtered silver containing layers on a substantially flat sheet of glazing material;
b) bending said substantially flat sheet of glazing material carrying said solar control coating layer such that the solar control coating layer is positioned at a convex surface of the bent sheet of glazing material;
c) laminating said bent sheet of glazing material carrying the solar control coating layer at a convex surface with another sheet of glazing material to form a glazing panel in which the solar control coating layer is positioned at the interior of the laminated glazing panel.

2. A method of manufacturing a curved laminated automotive glazing panel in accordance with claim 1, in which the glazing panel has a radius of curvature at at least one portion that is less than 400 mm, preferably less than 350mm and even more preferably less than 300 mm.

3. A method of manufacturing a curved laminated automotive glazing panel having a cross curvature of greater than or equal to 15 mm comprising the steps of:
a) depositing a solar control coating layer comprising a coating stack having at least two spaced sputtered silver containing layers on a substantially flat sheet of glazing material;
b) bending said substantially flat sheet of glazing material carrying said solar control coating layer such that the solar control coating layer is positioned at a convex surface of the bent sheet of glazing material;
c) laminating said bent sheet of glazing material carrying the solar control coating layer at a convex surface with another sheet of glazing material to form a glazing panel in which the solar control coating layer is positioned at the interior of the glazing panel.

4. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel has a cross

curvature of greater than or equal to 20 mm, preferably greater than or equal to 25 mm and even more preferably greater than or equal to 30 mm.

5. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel has a depth of bending that is greater than or equal to 150 mm.

6. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the coating layer is adapted to be electrically heatable to provide a de-misting and/or de-icing function to the glazing panel and in which the glazing panel is provided with a pair of spaced bus bars adapted to relay electrical power to heat the solar control coating layer.

7. A method of manufacturing a curved laminated automotive glazing panel in accordance with claim 6, in which the glazing panel is provided with a substantially opaque band arranged at the internal, concave surface of the glazing panel adapted to mask the bus bars from view from the exterior of the glazing panel.

8. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel has a width of greater than about 1.6 m.

9. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel is an automotive windscreen.

10. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel has a luminous transmittance of at least 75% (measured using Illuminant A, 2 degree observer).

11. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the colour co-ordinates of the glazing panel in reflection from the exterior measured on the CIElab scale at normal incidence are within the range:

L*=40 ±3 a*=-6 ±3 b*=-8 ±4; or
L*=39 ±3 a*=-6 ±3 b*=-2 ±2; or
L*=36 ±3 a*=-5 ±2 b*=-4 ±2 .

12. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which colour variation in reflection over the surface of the glazing panel is such that when measured at different points over a single glazing, the values of either a* and/or b* measured on the CIElab scale at normal incidence do not vary by more than ±1.5, and preferably by not more than ±1.

13. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the electrical resistance of the heatable coating layer is between 1.5 and 4 ohms per square.

14. A method of manufacturing a curved laminated automotive glazing panel in accordance with any preceding claim, in which the glazing panel is provided with a pair of spaced bus bars adapted to provide electrical power to heat the solar control coating layer and in which the resistance between the bus bars is between about 0.75 and 8 ohms.

15. A curved laminated automotive glazing panel having a radius of curvature at at least one portion that is less than 500 mm in which the glazing panel is provided with a solar control coating layer positioned at its convex internal surface and in which the coating stack comprises at least two spaced sputtered silver containing layers initially deposited on a substantially flat sheet of glazing material which is subsequently bent to form a part of the glazing panel.

16. A curved laminated automotive glazing panel in accordance with claim 15, in which the glazing panel has a radius of curvature at at least one portion that is less than 400 mm, preferably less than 350mm and even more preferably less than 300 mm.

17. A curved laminated automotive glazing panel having a cross curvature of greater than or equal to 15 mm in which the glazing panel is provided with a solar control coating layer positioned at its convex internal surface and in

which the coating stack comprises at least two spaced sputtered silver containing layers initially deposited on a substantially flat sheet of glazing material which is subsequently bent to form a part of the glazing panel.

18. A curved laminated automotive glazing panel in accordance with any one of claims 15 to 17, in which the glazing panel has a cross curvature of greater than or equal to 20 mm, preferably greater than or equal to 25 mm and even more preferably greater than or equal to 30 mm.

19. A curved laminated automotive glazing panel in accordance with any one of claims 15 to 18, in which the glazing panel has a depth of bending that is greater than or equal to 150 mm.

20. A curved laminated automotive glazing panel in accordance with any one of claims 15 to 19, in which the coating layer is adapted to be electrically heatable to provide a de-misting and/or de-icing function to the glazing panel and in which the glazing panel is provided with a pair of spaced bus bars adapted to relay electrical power to heat the solar control coating layer.

21. A curved laminated automotive glazing panel in accordance with claim 20, in which the glazing panel is provided with a substantially opaque band arranged at the internal, concave surface of the glazing panel adapted to mask the bus bars from view from the exterior of the glazing panel.

22. A curved laminated automotive glazing panel in accordance with any one of claims 15 to 21, in which the glazing panel has a width of greater than about 1.6 m.

23. A curved laminated automotive glazing panel in accordance any one of claims 15 to 22, in which the glazing panel is an automotive windscreen.

24. A curved laminated automotive glazing panel in accordance any one of claims 15 to 23, in which the glazing panel has a luminous transmittance of at least 75% (measured using Illuminant A, 2 degree observer).

25. A curved laminated automotive glazing panel in accordance any one of claims 15 to 24, in which the colour of the glazing panel in reflection from

the exterior is such that the colour co-ordinates of the glazing panel in reflection from the exterior measured on the CIElab scale at normal incidence are within the range:
L*=40 ±3 a*=-6 ±3 b*=-8 ±4; or
L*=39 ±3 a*=-6 ±3 b*=-2 ±2; or
L*=36 ±3 a*=-5 ±2 b*=-4 ±2 .

26. A curved laminated automotive glazing panel in accordance any one of claims 15 to 25, in which colour variation in reflection over the surface of the glazing panel is such that when measured at different points over a single glazing, the values of either a* and/or b* measured on the CIElab scale at normal incidence do not vary by more than ±1.5, and preferably by not more than ±1.

27. A curved laminated automotive glazing panel in accordance any one of claims 15 to 26, in which the electrical resistance of the heatable coating layer is between 1.5 and 4 ohms per square.

28. A curved laminated automotive glazing panel in accordance any one of claims 15 to 27, in which the glazing panel is provided with a pair of spaced bus bars adapted to provide electrical power to heat the solar control coating layer and in which the resistance between the bus bars is between 0.75 and 8 ohms.

29. Use of a sputter deposited double silver coating layer which is initially deposited on a substantially flat glazing sheet and subsequently bent into a convex configuration to provide a laminated automotive glazing panel in accordance with any one of claims 15 to 28.

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